

4. "On some Species of *Acidaspis* from the Lower Silurian beds of the South of Scotland." By Professor Wyville Thomson. Communicated by J. W. Salter, Esq., F.G.S.

The author described three new species of the trilobitic genus *Acidaspis*, from the Lower Silurian flagstones with Graptolites and Orthoceratites of Pinwhapple Glen, and one from the overlying sandstone of Mullock Hill, Ayrshire. The names proposed for these species were *Acidaspis Lalage*; *A. hystrix*; *A. unica*; and the fourth, *A. callipareos*.

5. "On two Silurian Species of *Acidaspis* from Shropshire." By J. W. Salter, Esq., F.G.S.

In this communication Mr. Salter gave descriptions and figures of *Acidaspis coronata*, sp. nov., from the Lower Ludlow Rock, and *A. Caractaci*, from the Caradoc or Bala Sandstone of Gretton. The latter species had been previously described, but not figured.

MISCELLANEOUS.

Observations on the Organization and Reproduction of the Volvocineæ. By F. COHN.

THE author states that his observations on *Volvox globator* have convinced him that its proper place is amongst the Algæ. In it, as in the *Eudorinæ*, *Gonia*, *Stephanosphæra*, and other *Volvocineæ*, each spherule is not so much an individual properly so called, as an association or family of individuals,—a sort of vegetable polypary. A globe of *Volvox* is formed at its periphery by an infinity of very small six-sided cells, soldered together like the elements of an epidermic tissue. Each of these cells is furnished with two moveable cilia, and may be compared to a *Chlamydococcus*; its green endochrome is as it were suspended in its cavity, and only touches its walls by means of filiform processes.

Like all Algæ, *Volvox* possesses two modes of reproduction, but hitherto only one of these has been known to naturalists: this consists in a continual division of their cells, and recalls the scissiparity of *Chlamydococcus* or *Gonium*, or that of most of the *Palmellaceæ*. In each sphere of *Volvox* there is never more than a very small number of utricles, which are charged with this part of multiplication. By the continual binary division of their endochrome, these special utricles, which are simple at first, come to contain as many as 12,000 distinct cells, and thus become so many new spheres, which soon free themselves.

The second mode of reproduction of the *Volvox* requires a sexual concourse, and is not observed indifferently in all individuals. The spherules endowed with sexuality are recognizable by their size and by the greater number of their component utricles; they are generally monœcious, that is, they contain both male and female cells; but the greater part of their elements is neutral. The female cells soon exceed their neighbours in size; they acquire a deeper green tint, and become elongated, in the manner of a matrass, towards the

centre of the *Volvox*. The endochrome of these cells undergoes no division. In other utricles, on the contrary, which acquire the volume and form of the female cells, the green plastic matter divides symmetrically into an infinity of very small parts, or linear corpuscles, aggregated into discoid bundles. These are beset with vibratile cilia, and oscillate in their prison, slowly at first, but afterwards more rapidly, and they soon dissolve into their constituent elements. The free corpuscles are very active, and it is impossible not to recognize them as true spermatozoids; they are linear, and thickened at their posterior extremity; two long cilia are situated behind their middle; and their rostrum, which is curved like the neck of a swan, is endowed with sufficient contractility to execute the most varied movements. These spermatozoids, as soon as they can diffuse themselves in the cavity of the *Volvox*, soon collect about the female cells, and succeed in penetrating into their interior; there they fix themselves by their rostrum to the plastic globule in each cell which is to form a spore, and gradually become incorporated with it. Fecundation thus effected, this reproductive globule envelopes itself successively with an integument beset with conical pointed processes, and with an inner smooth membrane; the chlorophyll which it contains then gives place to starch, and a red or orange-coloured oil. This is the mature spore, of which the author has seen forty in one sphere of *Volvox*. The author has not observed the germination of these spores.

He adds, that there is no doubt that the *Sphærosira Volvox* of Ehrenberg is a monœcious *Volvox globator*; that his *V. stellatus* is the same *V. globator* filled with spinose or stellate spores; and that his *V. aureus* only differs from the common *Volvox* by having accidentally smooth spores.—*Comptes Rendus*, 1 Dec. 1856, p. 1054.

List of Phænogamous Plants collected by Dr. E. K. KANE on the Western Coast of Greenland, from 73°–80° North. Extracted from his "Arctic Explorations," ii. 445.

Dr. Kane and his parties having penetrated much further towards the Pole than any of the other Arctic expeditions, and succeeded in arriving at what is perhaps the northern extremity of Greenland, and at an open Polar Sea of unknown extent, the list of the plants brought back by them possesses interest—(1) from its raising the total number of N. Greenland plants from forty-nine to seventy-six; (2) by showing that there is little or no difference in the vegetation throughout the whole extent of the Greenland coast from the 67th to the 81st degree; (3) by proving that two plants, *Hesperis Pallasii* and *Vesicaria arctica*, flourish on the most northern land that has been discovered, although they had previously been noticed only in the milder regions of the Polar zone. Mr. E. Durand, the editor of the botanical appendix to Dr. Kane's book, remarks upon this latter fact, that, although limited to the appearance of two species, it "seems to indicate peculiar isothermal influences, depending either on warm currents, greater depth of water, or actual depression of our globe at its poles."